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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,501	11/19/2003	Mihri Ozkan	034044.029	5888
53498	7590	04/18/2006	EXAMINER	
SMITH, GAMBRELL & RUSSELL, LLP (UC)			TUNG, JOYCE	
SUZANNAH K. SUNDBY			ART UNIT	
1850 M. STREET NW			PAPER NUMBER	
# 800			1637	
WASHINGTON, DC 20036			DATE MAILED: 04/18/2006	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/715,501	Applicant(s) OZKAN ET AL.	
	Examiner Joyce Tung	Art Unit 1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8-16, 19 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claims 8-16, 19, and 21 are vague and indefinite because it is unclear what is meant by the language "the quantum dot has two or more nucleic acid molecules having a probe". Clarification is required.
- b. Claim 9 is vague and indefinite because it is unclear what is the definition of the phrase "in a pattern". Clarification is required.
- c. Claim 11 is vague and indefinite because claim 8 does not claim there are multiple probes. It is unclear where the language "the probes may be the same or different" is referred.
- d. Claims 12-13 are vague and indefinite because claim 8 does not claim there are multiple quantum dots. Based upon the languages of claims 12-13, it appears that there are multiple quantum dots claimed in claim 8. It is suggested to amend language to avoid conflicting limitations.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1637

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Nie et al. (US 2003/0148544, issued August 7, 2003).

Nie et al. disclose a molecular beacon which has quantum dot attached to a first end of at least one nucleic acid molecule having a probe and forms a stem-loop structure in the absence of a target sequence hybridized and a quencher attached to a second end of the nucleic acid molecule (See pg. 3, [0024] and [0086]). The quencher is an organic quencher, such as DABCYL or gold substrate (See pg. 11 [0087]). The quantum dot is a ZnS capped CdSe quantum (See pg. 13, [0108]) and can be fabricated as arrays (See pg. 1, [0008]).

Nie et al. do not disclose that the nucleic acid molecules are attached to the quantum dot in a pattern.

However, there is no definition regarding how the pattern looks like. Any arrangements of the quantum dots on the nucleic acid molecules are considered in a pattern. The teachings of Nie et al. anticipate the limitations of the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1637

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nie et al. (US 2003/0148544, issued August 7, 2003) as applied to claims 1-17 above, and further in view of Stanton et al. (6,680,377, issued January 20, 2004).

The teachings of Nie et al. are set forth in section 4 above. Nie et al. do not disclose an array, which has the molecular beacons as recited in claim 1

Stanton et al. disclose that aptamer beacons can be attached to solid support at different predetermined points in two-dimensional arrays (See the Abstract). The aptamer beacons have fluorephore and quencher attached to each end of the aptamer beacons (See column 12, lines 62-67, column 13, lines 1-5).

One of ordinary skill in the art would have been motivated to make the array, which has the molecular beacons of Nie et al. attached because the array of Stanton et al. is used for simultaneously detecting the presence and quantity of one or more different compounds in a sample (See the Abstract). It would have been prima facie obvious to make the array which has the molecular beacon attached in which the molecular beacon has quantum dot attached to a first end of at least one nucleic acid molecule having a probe and forms a stem-loop structure in the

Art Unit: 1637

absence of a target sequence hybridized and a quencher attached to a second end of the nucleic acid molecule.

7. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nie et al. (US 2003/0148544, issued August 7, 2003).

The teachings of Nie et al. are set forth in section 4 above. Nie et al. do not disclose the kit containing the molecular beacons as recited in claim 1 and instructional material.

One of ordinary skill in the art would have been motivated to construct a kit containing the molecular beacons as recited in claim 1 because constructing a kit containing the reagent as needed for conveniently performing method was well known practice in the art at the time of the invention. It would have been prima facie obvious to make the kit containing the molecular beacon as recited in claim 1 and instructional material.

8. U.S. patent NO. 6,326,144 is made of record as ^areference of interest because the patent discloses a quantum dot, which has a desired energy for biological application (See column 3, lines 32-42).

Summary

9. No claims are allowable.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (571) 272-0790. The examiner can normally be reached on Monday - Friday, 8:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1637

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joyce Tung J.T

April 13, 2006


KENNETH R. HORLICK, PH.D
PRIMARY EXAMINER

4/13/06